

# LIGHT EMITTING DEVICE WITH TAPERED OPTICAL FIBER

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Inventor: SAKAMOTO ATSUSHI

Applicant: FUJITSU LTD

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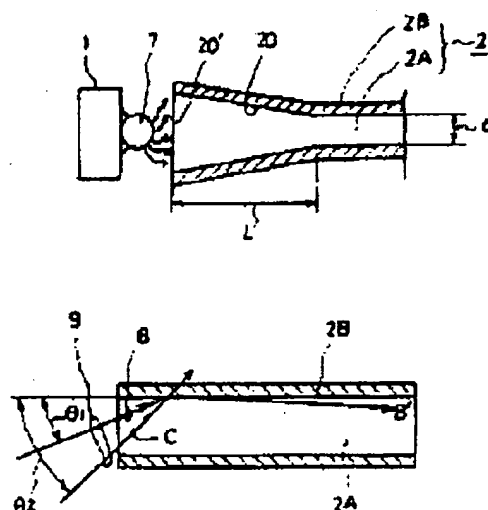
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## Abstract of JP61065208

**PURPOSE:** To increase the quantity of light incident on the optical fiber 2 and improve the reliability and transmission efficiency of the optical fiber communication device by maximizing the diameter of an optical fiber at its end surface side facing a light emission source, and tapering it gradually to a prescribed diameter. **CONSTITUTION:** A photodetection end surface 20' which is increased in photodetection area by increasing the diameter as shown by a tapered part 20 is provided at the position opposite the light emission source 1 equipped with a spherical lens 7. An incident light beam 9 is made incident on the photodetection end surface 20' and the quantity of incidence increases greatly. When the angle of incidence is  $\leq \theta_1$ , the light beam 9 propagates in the fiber while reflected by the boundary between the core and clad as shown by an arrow 8'. The quantity of incident light itself is increased while nearly satisfying the permissible angle  $\theta_1$  of incidence on a general optical fiber as long as  $a'/L < 1$ , where L is the length of the tapered part 20 and a' is the diameter of the photodetection end part. Consequently, the light beam is utilized effectively and the reliability and efficiency of the optical communication device are improved greatly.



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